

Notice of Allowability

Application No.

09/932,053

Examiner

Hsien-Ming Lee

Applicant(s)

WU ET AL.

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1/28/04.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ The drawings filed on 14 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Hsien Ming Lee 4/5/04

DETAILED ACTION

Remarks

1. Claims 1-20 are pending in the application.
2. 103(a) rejection is withdrawn in response to the arguments filed 1/28/04.

Examiner's Amendment

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

4. The application has been amended as follows:

Change the title into – A semiconductor package having vertically mounted passive devices under a chip and a fabricating method thereof --.

Allowable Subject Matter

5. Claims 1-20 are allowed.
6. The following is an examiner's statement of reasons for allowance:

The prior art of record, Marrs et al. (US 5,355,283), teaches a method and a semiconductor package by the method, comprising:

- providing a substrate 602 having a device-mounting region, i.e. the region for passive devices (col. 2, lines 66-67), predefined with a chip-mounting region on a surface of the substrate (Fig.6), and a wire bonding region, i.e. the region where traces 605 are located, predefined around the device-mounting region;

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- mounting a plurality of passive devices on the device-mounting region (col. 2, lines 66-67, wherein Marrs et al. suggest that passive components can be mounted on the substrate);
- using an insulative material 609 for filling vias 607;
- disposing a semiconductor chip 601 on the substrate 602;
- providing a plurality of bonding wires 606 for electrically connecting the semiconductor chip 601 to the traces 605 (Fig.6);
- forming an encapsulant 603 for encapsulating the semiconductor chip 601 and the bonding wires 606 (Fig.6); and
- providing a plurality of conductive members 604 for electrically connecting the substrate 602 to an external device (Fig.6).

Marrs et al. do not teach or suggest using the insulative material for encapsulating the passive devices such that the semiconductor chip is free of contact with the passive devices, the insulative material is a thermosetting or thermoplastic material selected from the group consisting of epoxy, silicone and polyimide; and utilizing the bonding wires for electrically connecting the semiconductor chip to the bonding fingers of the substrate.

Although Marrs teach mounting passive devices on the substrate, the teachings does not provide a factual evidence or any inherency or suggestions in using the insulative material for encapsulating the passive devices such that the semiconductor chip is free of contact with the passive devices.

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Therefore, in the examiner's opinion, it would not have been obvious to one of the ordinary skill in the art, at the time of the invention was made, to modify the prior art to arrive the instant invention.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-Ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on M-F (9:00 ~ 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hsien-Ming Lee
Examiner
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April 5, 2004

